ASPHALTIC CONCRETE PAVEMENT
FIELD SECTION 403

403.1 Scope. To establish procedures for mix design of asphaltic concrete pavement, inspection and acceptance of bituminous mixture. Ingredients for use in asphaltic concrete pavement are to be inspected in accordance with the applicable sections of this Manual. Plant calibrations, if requested, will be performed in accordance with General Section 10 of this Manual.

403.2 Mix Design Procedure. In order for an asphaltic concrete mix formula to be approved, the contractor's proposed job mix formula (JMF) shall be submitted as required in Section 403.3.1. The time for approval starts when the completed design is delivered to the District. This time restarts when the District receives information omitted from the original JMF or corrected by the contractor. Review times include District and Central Office processing, therefore, each mix should be processed as soon as possible. When the contractor is not accepted as a participant in the AASHTO Proficiency Sampling Program, material sampling is required for mixture verification. Trial mix samples must be obtained and submitted to the Central Laboratory in accordance with Field Sec 1001 of this Manual. When possible, the JMF and correspondence should be transmitted electronically. The Materials Field Office e-mail address is MFO.

403.2.1 District Procedure. When the District receives a proposed trial mix formula, as required by the Standard Specifications, the mixture properties, components and proportions should be checked to ensure compliance with Specifications and that they are approved for the intended use. It may be necessary for the District to advise the contractor to make changes in the proposed mixture in order to comply with Department policies. The District shall provide SiteManager ID's and all pertinent information (gradation, deleterious, etc.) for each fraction of aggregate used in the mixture. A QC plan in accordance with Field Sec 1001 of this Manual covering each aggregate fraction should be on file in the District Office or received with the JMF. The target gradations shown on the QC plan and JMF must match. When the District is satisfied that the proposed mixture is acceptable, a copy of the JMF and the contractor's letter shall be submitted to the Materials Field Office, accompanied by a letter of transmittal with comments, any corrections made and recommendations. The transmittal letter shall contain the following information:

Project information – Job Number, Route, County, Contract Number.
Mixture Types
Grade and Source of Asphalt Binder
Letting Date
Proposed Work – Type of Work, Job Location and Length
Average Daily Traffic (ADT)
Total Trucks
Total Combination Trucks
Mix Use – Mainline, Shoulders, Outer Roads, Entrances, etc.
Quantity of Mix

Included in the letter should be information regarding the approximate date on which the contractor intends to begin placing the mixture on the roadway, the type of mixture needed first and whether the JMF is submitted for a 7-day review or verification. Information concerning plant location, type of plant to be used, etc., is beneficial.

403.2.1.1 If the mixture design is performed by a laboratory participating in the AASHTO Proficiency Sampling Program with a rating of 3 or more on the applicable test methods, trial

mix material does not need to be submitted to the Laboratory unless one or more of the following conditions apply:

a. Nuclear calibration for MoDOT asphalt content gauges is needed.

b. Material for full verification of the mixture is requested by the Field Office.

c. District personnel have concerns over any aspect of the mix design.

403.2.1.2 Requests for previously approved mixes shall be submitted and will be approved in accordance with applicable portions of this Section.

403.2.1.3 Upon request by the contractor, the District has authority to change the source of mineral filler, hydrated lime, natural sand from the Missouri and Mississippi Rivers or asphalt binder. However, constant changing throughout a project should not be allowed. The contractor must provide reasonable justification for changing sources during the course of a project. Any adjustments should be made to the JMF to reflect changed properties caused by the new source. (e.g. Change in G_{sb}, gradation, asphalt content, etc.)

403.2.1.4 Approval of a new mix design shall be obtained prior to changing the source of aggregates used in a mixture.

403.2.2 Field Office Procedure. The Materials Field Office is charged with the responsibility of processing the mix formula. General procedures for processing an asphaltic concrete mix formula are as follows:

a. A letter from a District requesting a mix with a copy of the contractor's JMF and letter is received.

b. Contract Special Provisions for the project are checked for necessary items.

c. The urgency of the mix and the status of trial mix samples in the Central Laboratory are reviewed.

d. Grade of asphalt as well as the refinery to be used and the percent asphalt recommended are reviewed.

e. Gradations of the individual aggregates are checked for specification compliance and compared with the gradations determined by the Laboratory.

f. All calculations on the proposed JMF are checked.

g. For verification, a one-point trial is prepared and submitted to the Laboratory.

h. When Central Laboratory tests are completed, the results are compared to the contractor’s and against the specifications. If the mixes tested cannot be used, the mixture will be rejected.

i. Formulas to check aggregate and mixture properties are shown in LS 403.

j. Absorption values obtained by AASHTO T85 or T85 Combined will be shown on the JMF for determining which mixtures require the optional dry-back procedure of AASHTO T209.

403.3 Field Adjustments of Superpave Mix Design. The specification criteria are to be used to determine whether or not the mixture meets the specifications. When a mixture is field adjusted, the contractor is to notify the inspector prior to making the adjustment. A new G_{sb} is required when cold feed adjustments are made. A new lot will begin with any change in asphalt content. Adjustments beyond the limits set in the specifications will require a new mix design. Field adjusted mixture changes are not required to be sent to the Field Office, however, the District will track the changes to ensure proper material quantities are inspected.

403.4 Field Superpave Mix Design. When a field mix design is needed, the contractor must first notify the engineer (the Materials Field Office is to be notified immediately). During the design and verification process, no mixture is to be placed on the project. A plan for producing, sampling and verifying the proposed field mix design is to be agreed on between the contractor and the engineer. One hundred (100) pounds of loose mixture will be required in the Central Laboratory and **the Materials Field Office will approve or deny the field mix design.** In order to be accepted for use, the test results must meet all of the following:

a. Minimum VMA for the mixture type, i.e., 12.0 minimum for 250 mixes, 13.0 for 190 mixes, 14.0 for 125 mixes, and 17.0 for 125 SMA mixes.

b. Asphalt content within 0.3 % of the adjusted target. For example, if the contractor chose to lower the asphalt content from 5.0 percent to 4.8 percent for a field adjustment, the initial test results must be within 0.3 % of 4.8 percent.

c. Air voids of 4.0 +/- 0.5

d. TSR result is equal to or greater than 80%.

The contractor and Central Laboratory may run the moisture sensitivity test simultaneously. If the contractor's test results meet the above criteria, and the results are verified by the Central Laboratory, the target VMA will be set at the contractor's test result, the target AC content will be set at the target set for the field mix design, and the air voids target will be set at 4.0.

403.5 Report. A letter of transmittal will accompany the approved mixture to the district Operations Engineer with distribution as follows:

Title (e-mail address)	Copy of Letter of Transmittal & Approved Mix
District Operations Engineer (D#MaContacts)	1
Construction and Materials Clerk	1
Resident Engineer (POorg)	1
Physical Laboratory Director (PLO)	1
Chemical Laboratory Director (Extraction)	1
Design Representative	1
Field Office File	1
Contractor	1

The letter of transmittal and the approved mixture will be sent by electronic mail to the individuals listed above.

A copy of the approved formula accompanied by a letter of transmittal from the District Operations Engineer is to be forwarded to the contractor when an electronic mail address for the contractor has not been provided.